



Focused Session: Quantum Control

Abstract submission deadline: 25th September 2023

Australia has a very active community of theory, experimental, and commercial research and development in quantum control. This field supports other areas of quantum information science and technology, such as developing quantum computers, communication networks and sensing applications. In addition, novel theoretical methods developed by the quantum control community support the fundamental understanding of noise mechanisms and computational challenges related to simulating quantum systems. This focused session aims to bring together local and international experts in the field of quantum control to discuss the current challenges in the field, share recent advancements, and provide perspectives on how the field should progress in the future.

The topics for this focused session include (but are not limited to):

- Theoretical techniques for open- and closed-loop control methods utilising:
 - o Machine Learning
 - o Stochastic Calculus
 - o Tensor Networks
 - o Signal Processing (frames, filter function...)
 - o Numerical optimization (Gradient and Gradient-free methods...)
 - o Physics and mathematical methods (dynamical decoupling....)
- Quantum system identification
- Quantum noise modelling and characterization
- Quantum characterization, verification, and validation
- Controllability for quantum systems
- Simulation of open quantum systems
- Non-Markovian systems modelling, characterization, and control
- Continuous-variable systems modelling, characterization, and control
- Experimental control solutions applied to different platforms

Organizers:

A Prof. Alberto Peruzzo (RMIT University)

Dr Akram Youssry (RMIT University)

Dr Arinta Auza (RMIT University)

<https://aip-summer-meeting.com>